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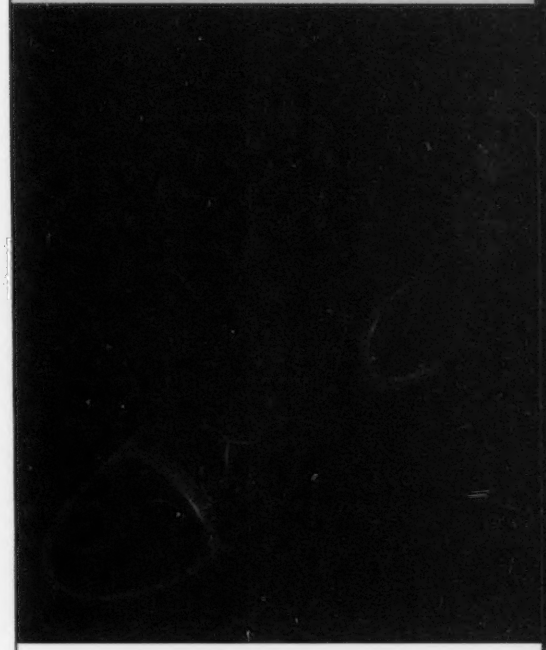

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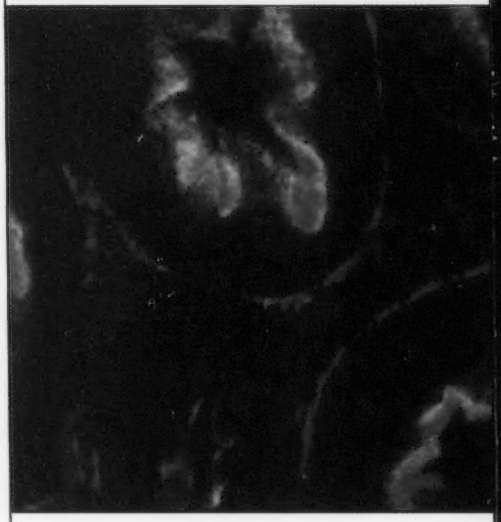

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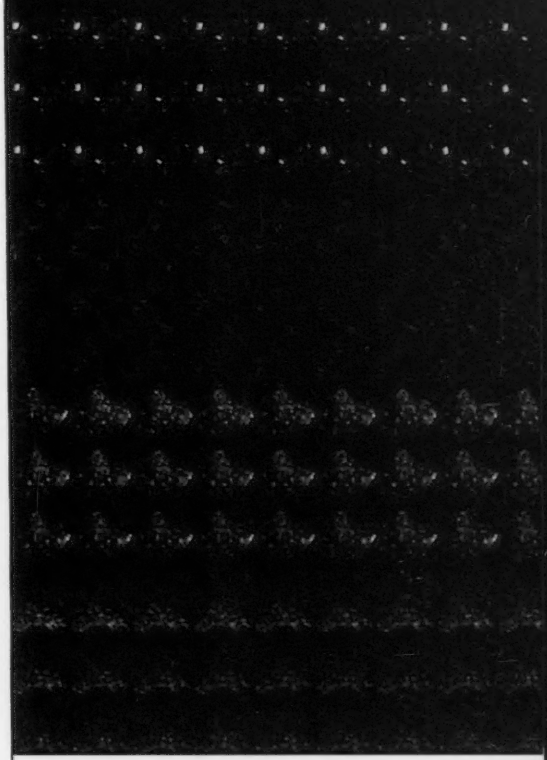

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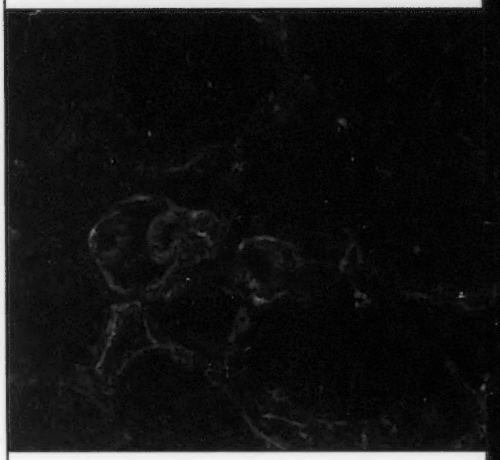

Injured muscle is faster to regenerate (red) when necdin expression is high.
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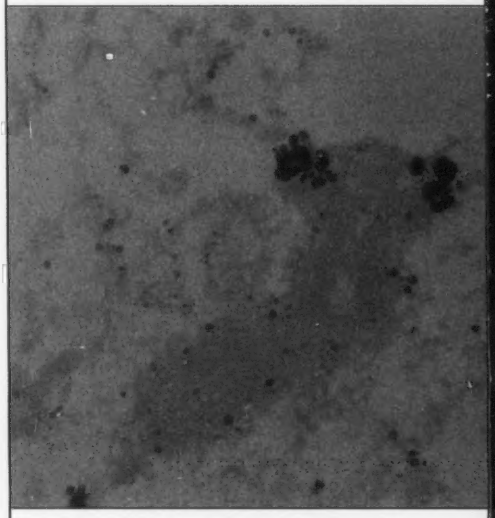

Cep164 (black) localizes to the distal appendages of mature centrioles, where it helps form primary cilia.
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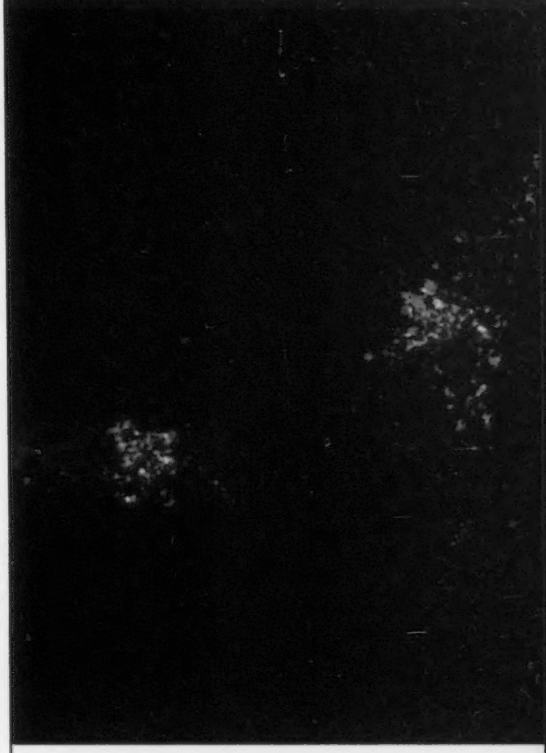

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Protein deposits (red) are not cleaned up in autophagy-deficient cells. This might lead to dementia, say Filimenko et al.
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553 A molecular switch that controls cell spreading and retraction
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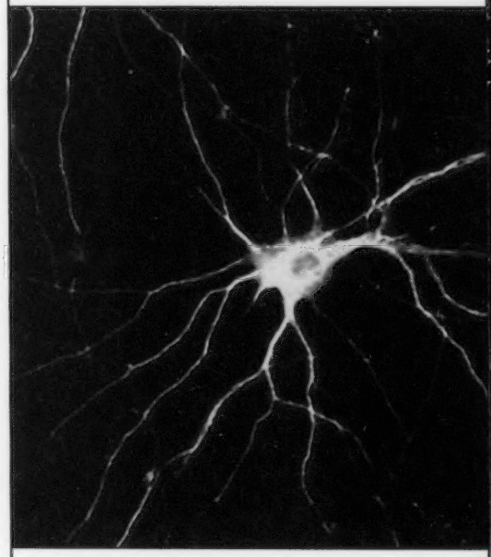

The very-KIND signal transducer (green) activates microtubule associated protein (red) to prompt dendrite growth.
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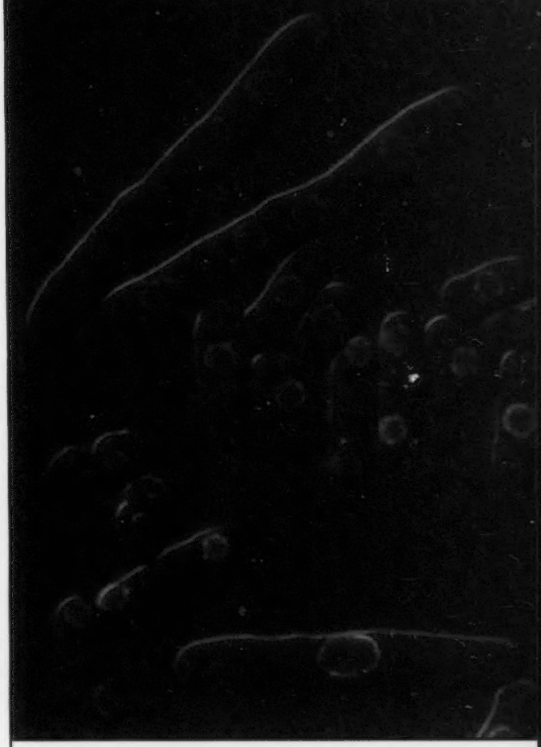

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Unlike moesin, ezrin (green) is found with the T cell receptor (red) at the forming immune synapse, where it recruits a signaling kinase.
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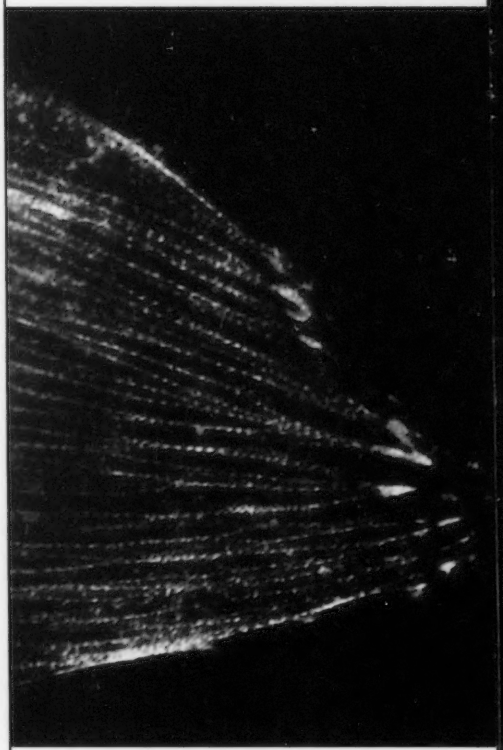

G-actin (red) incorporation into stress fibers (blue) occurs in puncta that include VASP (green).
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Reports

817 NHK-1 phosphorylates BAF to allow karyosome formation in the *Drosophila* oocyte nucleus

825 Chromatin modification of Apaf-1 restricts the apoptotic pathway in mature neurons

833 Regulation of Rap1 activity by RapGAP1 controls cell adhesion at the front of chemotaxing cells

Articles

845 Telomere anchoring at the nuclear periphery requires the budding yeast Sad1-UNC-84 domain protein Mps3

855 Lack of TRF2 in ALT cells causes PML-dependent p53 activation and loss of telomeric DNA

869 MCAK facilitates chromosome movement by promoting kinetochore microtubule turnover

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On the cover

Filaments of actin-like ParM (green) repeatedly push apart bacterial plasmids (blue) to help segregate the plasmids during cell division.
See page 1059.

881 Alternative function for the mitochondrial SAM complex in biogenesis of α-helical TOM proteins
Diana Stojanovski, Bernard Guiard, Vera Kozjak-Pavlovic, Nikolaus Pfanner and Chris Meisinger

895 Endoplasmic reticulum remains continuous and undergoes sheet-to-tubule transformation during cell division in mammalian cells
Maija Puhka, Helena Vihinen, Merja Joensuu, and Eija Jokitalo

911 Megf10 regulates the progression of the satellite cell myogenic program
Chet E. Holterman, Fabien Le Grand, Shihuan Kuang, Patrick Seale and Michael A. Rudnicki

923 A function for tyrosine phosphorylation of type 1 inositol 1,4,5-trisphosphate receptor in lymphocyte activation
Nikhil deSouza, Jie Cui, Miroslav Dura, Thomas V. McDonald and Andrew R. Marks

935 Site-specific ubiquitination exposes a linear motif to promote interferon-α receptor endocytosis
K.G. Suresh Kumar, Hervé Barriere, Christopher J. Carbone, Jianghuai Li, Gautam Sabarinathan, Pradeep Kumar T. Dinesh P, Balaji Jayaram, Peng Liu, Georges L. Lukacs, and Sergey Y. Tsai

951 Biogenesis of γ-secretase early in the secretory pathway
Jinoh Kim, Bertrand Kleizen, Regina Choy, Gopal Thinakaran, Sangram S. Sisodia, and Randy W. Schekman

965 Adenovirus RIDα regulates endosome maturation by mimicking GTP-Rab7
Ankur H. Shah, Nicholas L. Cianciola, Jeffrey L. Mills, Frank D. Sönnichsen, and Cathleen Carlin

981 Endothelin-converting enzyme-1 regulates endosomal sorting of calcitonin receptor-like receptor and β-arrestins
Benjamin E. Padilla, Graeme S. Cottrell, Dirk Roosterman, Stefan Pierau, Lauren Mayer, Martin Steinhoff, and Nigel W. Bunnett

999 Requirements for sulfate transport and the diastrophic dysplasia sulfate transporter in fibronectin matrix assembly
Christine L. Galante and Jean E. Schwarzbauer

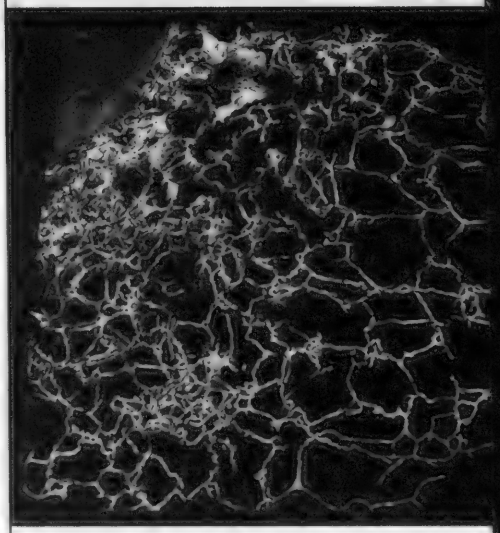
1011 Structural basis of filamin A functions
Fumihiko Nakamura, Teresia M. Osborn, Christopher A. Hartemink, John H. Hartwig, and Thomas P. Stossel

1027 Dual roles of myocardin-related transcription factors in epithelial–mesenchymal transition via *slug* induction and actin remodeling
Tsuyoshi Morita, Taira Mayanagi, and Kenji Sobue

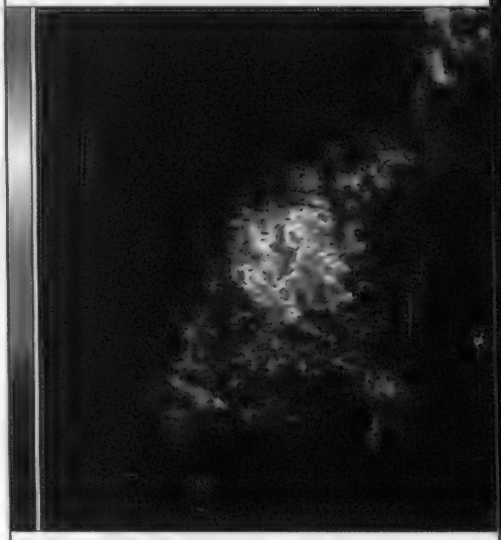
1043 Vinculin controls focal adhesion formation by direct interactions with talin and actin
Jonathan D. Humphries, Patricia Wang, Caroline Streuli, Benny Geiger, Martin J. Humphries, and Christoph Ballestrem

1059 In vivo visualization of type II plasmid segregation: bacterial actin filaments pushing plasmids
Christopher S. Campbell and R. Dyche Mullins

1067 Monomer–dimer dynamics and distribution of GPI-anchored uPAR are determined by cell surface protein assemblies
Valeria R. Caiolfa, Moreno Zamai, Gabriele Malengo, Annapaola Andolfo, Chris D. Madsen, Jason Sutin, Michelle A. Digman, Enrico Gratton, Francesco Blasi, and Nicolai Sidenius



The transformation of the ER (yellow) from interphase sheets into a continuous, branched, tubular network during mitosis can be mimicked by stripping ribosomes from the ER.
See page 895.



Vitronectin recruits uPAR (shown in intensity pseudocolor) to the basal membrane and limits is dynamics during cell adhesion.
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- Microglia to the rescue
- For long, lush cilia, try Par3
- Making room for muscle
- Hey, DNA, get over here

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- A chewing proteasome is stabilized
- Myosin remains strong as muscle contracts
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1093 How genes find their way inside the cell nucleus
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1105 *Drosophila* TIF-IA is required for ribosome synthesis and cell growth and is regulated by the TOR pathway
Savraj S. Grewal, Justin R. Evans, and Bruce A. Edgar

1115 Sorting switch of mitochondrial presequence translocase involves coupling of motor module to respiratory chain
Nils Wiedemann, Martin van der Laan, Dana P. Hutu, Peter Rehling, and Nikolaus Pfanner

1123 Dimeric PKD regulates membrane fission to form transport carriers at the TGN
Carine Bossard, Daniel Bresson, Rosalyn Polishchuk, and Vivek Malhotra

1133 Par3 functions in the biogenesis of the primary cilium in polarized epithelial cells
Jeff Stakianos, Akashi Togawa, Sandra Maday, Mike Hung, Mara Papaioannou, Lloyd Cantley, Derek Toomre, and Ira Mellman

1141 PDZRhoGEF and myosin II localize RhoA activity to the back of polarizing neutrophil-like cells
Kit Wong, Alexandra Van Keymeulen, and Henry R. Bourne

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An active gene (red) stretches to a Cajal body (white) thanks to the action of actin.
See page 1095.

Articles

1149 RMD-1, a novel microtubule-associated protein, functions in chromosome segregation in *Caenorhabditis elegans*
Kumiko Oishi, Hideyuki Okano, and Hitoshi Sawa

1163 The mitochondrial respiratory chain is a modulator of apoptosis
Jennifer Q. Kwong, Matthew S. Henning, Anatoly A. Starkov, and Giovanni Manfredi

1179 Interaction of the conserved oligomeric Golgi complex with t-SNARE Syntaxin5a/Sed5 enhances intra-Golgi SNARE complex stability
Anna Shestakova, Elena Suvorova, Oleksandra Pavliv, Galimat Khaidakova, and Vladimir Lupashin

1193 A molecular specificity code for the three mammalian KDEL receptors
Irina Raykhel, Heli Alanen, Kirsi Salo, Jaana Jurvansuu, Van Dat Nguyen, Maria Latva-Ranta, and Lloyd Ruddock

1205 A naturally occurring calcineurin variant inhibits FoxO activity and enhances skeletal muscle regeneration
Enrique Lara-Pezzi, Nadine Winn, Angelika Paul, Karl McCullagh, Esfir Slominsky, Maria Paola Santini, Foteini Mourkioti, Padmini Sarathchandra, Satsuki Fukushima, Ken Suzuki, and Nadia Rosenthal

1219 MyD88-deficient bone marrow cells accelerate onset and reduce survival in a mouse model of amyotrophic lateral sclerosis
Jihong Kang and Serge Rivest

1231 Cdk2 is critical for proliferation and self-renewal of neural progenitor cells in the adult subventricular zone
Beata Jablonska, Adan Aguirre, Renaud Vandenbosch, Shannon J. Belachew, Cyril Berthet, Philipp Kaldis, and Vittorio Gallo

1247 EGF-induced PIP_2 hydrolysis releases and activates cofilin locally in carcinoma cells
Jacco van Rheenen, Xiaoyan Song, Wim van Roosmalen, Marjolein Cammer, Xiaoming Chen, Vera DesMarais, Shin-Cheh Yan, Jonathan M. Backer, Robert J. Eddy, and John S. Condeelis

1261 Newly identified biologically active and proteolysis-resistant VEGF-A isoform VEGF111 is induced by genotoxic agents
Pierre Mineur, Alain C. Colige, Christophe F. Deroanne, Johann L. Dubois, Frédéric Kesteloot, Yvette Habraken, Agnès Noël, Stefan Vöß, Johannes Waltenberger, Charles M. Lambert, Bert V. Houtgraaf, and Charles A. Lambert

1275 Regulation of lamellipodial persistence, adhesion turnover, and motility in macrophages by focal adhesion kinase
Katherine A. Owen, Fiona J. Pixley, Keena S. Thomas, Miguel Vicente-Manzanares, Brianne J. Ray, Alan F. Horwitz, J. Thomas Parsons, Hanna E. Beggs, E. Richard Stanley, and Amy H. Bouton

1289 In vivo induction of postsynaptic molecular assembly by the cell adhesion molecule Fasciclin2
Hiroshi Kohsaka, Etsuko Takasu, and Akinao Nose

1301 Phosphorylation at S365 is a gatekeeper event that changes the structure of Cx43 and prevents down-regulation by PKC
Joell L. Solan, Lactec a Marquez-Rosado, Paul L. Sorgen, Peter J. Thornton, Philip R. Gafken, and Paul D. Lampe

1311 Myofibroblast contraction activates latent TGF-β1 from the extracellular matrix
Pierre-Jean Wipff, Daniel B. Rifkin, Jean-Jacques Meister, and Boris Hinz

Cells (and flies) grow bigger with nutrient-dependent ribosome biogenesis factor, TIF-IA (green).
See page 1105.

Cargo (pink) gets trapped inside Golgi when cells lack protein kinase D – a newly identified membrane fisson factor.
See page 1123.

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- To bud where no bud has gone before
- Translation turns on dendritic cells
- Motility without invasion

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- Cells within cells (within cells)
- Building the immunological bull's eye
- tRNA's Los is a gain after damage
- Lipid + Alzheimer's plaque = problem

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- Anthony Hyman: From unlikely scientist to Royal Society Fellow

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1333 The expanding role of the ER translocon in membrane protein folding
William R. Skach

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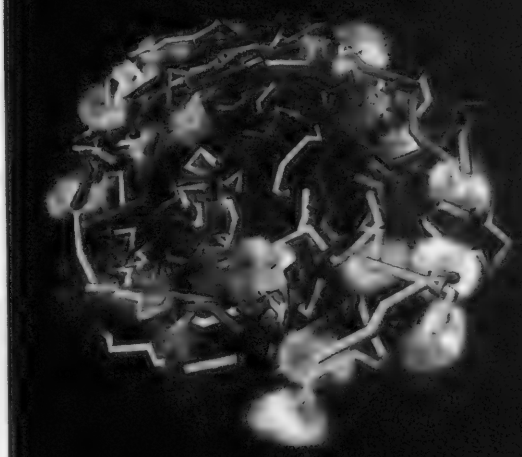
1337 The histone methyltransferase SET8 is required for S-phase progression

1347 Local cortical pulling-force repression switches centrosomal centration and posterior displacement in *C. elegans*
Akatsuki Kimura and Shuichi Onami

1355 A novel insertion pathway of mitochondrial outer membrane proteins with multiple transmembrane segments
Kiyoko Setoguchi, Hiroki Kato, Toshihiko Oka, and Katsu

1365 Genome-wide analysis demonstrates conserved localization of messenger RNAs to mitotic microtubules
Michael D. Blower, Elma Feric, Karsten Weis, and Rebecca Heald

1375 Adjacent positioning of cellular structures enabled by a Cdc42 GTPase-activating protein–mediated zone of inhibition



On the cover

The movements (colored lines) of breast epithelial cells within acini can occur without invasion.
See page 1555.

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Articles

1385 DNA-activated protein kinase functions in a newly observed S phase checkpoint that links histone mRNA abundance with DNA replication
Berndt Müller, Jane Blackburn, Carmen Feijoo, Xiujie Zhao, and Carl Smythe

1399 Retinoblastoma tumor suppressor protein–dependent methylation of histone H3 lysine 27 is associated with irreversible cell cycle exit
Alexandre Blais, Chris J.C. van Oevelen, Raphaël Margueron, Diego Acosta-Alvear, and Brian David Dynlacht

1413 PR-Set7–dependent lysine methylation ensures genome replication and stability through S phase
Mathieu Tardat, Rabih Murr, Zdenko Herceg, Claude Sardet, and Eric Julien

1427 Regulation of translation is required for dendritic cell function and survival during activation
Hugues Lelouard, Enrico K. Schmidt, Voahirana Camosseto, Giovanna Clavarino, Maurizio Ceppi, Hsiang-Ting Hsu, and Philippe Pierre

1441 Two translocating hydrophilic segments of a nascent chain span the ER membrane during multispanning protein topogenesis
Yuichiro Kida, Fumiko Morimoto, and Masao Sakaguchi

1453 Apoptosis induction by Bid requires unconventional ubiquitination and degradation of its N-terminal fragment
Stephen W.G. Tait, Evert de Vries, Chiel Maas, Anna M. Keller, Clive S. D'Santos, and Jannie Borst

1467 DIAP2 functions as a mechanism-based regulator of drICE that contributes to the caspase activity threshold in living cells
Paulo S. Ribeiro, Erina Kuranaga, Tencho Tenev, François Leulier, Masayuki Miura, and Pascal Meier

1481 Huntingtin-interacting protein 14, a palmitoyl transferase required for exocytosis and targeting of CSP to synaptic vesicles
Tomoko Ohyama, Patrik Verstreken, Cindy V. Ly, Tanja Rosenmund, Akhila Rajan, An-Chi Tien, Claire Haueter, Karen L. Schulze, and Hugo J. Bellen

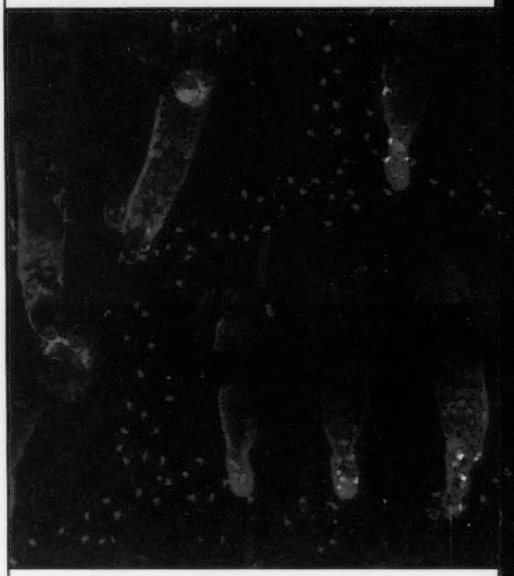
1497 Molecular basis of synaptic vesicle cargo recognition by the endocytic sorting adaptor stonin 2
Nadja Jung, Martin Wienisch, Mingyu Gu, James B. Rand, Sebastian L. Müller, Gerd Krause, Erik M. Jorgensen, Jürgen Klingauf, and Volker Haucke

1511 Mechanism of botulinum neurotoxin B and G entry into hippocampal neurons
Min Dong, William H. Tepp, Huisheng Liu, Eric A. Johnson, and Edwin R. Chapman

1523 Axons of retinal ganglion cells are insulted in the optic nerve early in DBA/2J glaucoma
Gareth R. Howell, Richard T. Libby, Tatjana C. Jakobs, Richard S. Smith, F. Campbell Phalan, Joseph W. Barter, Jessica M. Barbay, Jeffrey K. Marchant, Nagaraju Mahesh, Vittorio Porciatti, Alan V. Whitmore, Richard H. Masland, and Simon W.M. John

1539 Type I phosphatidylinositol 4-phosphate 5-kinase controls neutrophil polarity and directional movement
Rosa Ana Lacalle, Rosa M. Peregil, Juan Pablo Albar, Ernesto Merino, Carlos Martínez-A, Isabel Mérida, and Santos Mañes

1555 Real-time imaging reveals that noninvasive mammary epithelial acini can contain motile cells
Gray W. Pearson and Tony Hunter



Dendritic epidermal T cells (red) are found in the skin of wild-type mice (shown) but are scarce in mice that lack the scaffold on which the outer layer of the skin forms.
See page 1599.

Adhesion site formation requires Zasp (green), which colocalizes with βPS integrin (red) in myotendinous junctions and with α-actinin in muscle Z-lines.
See page 1583.

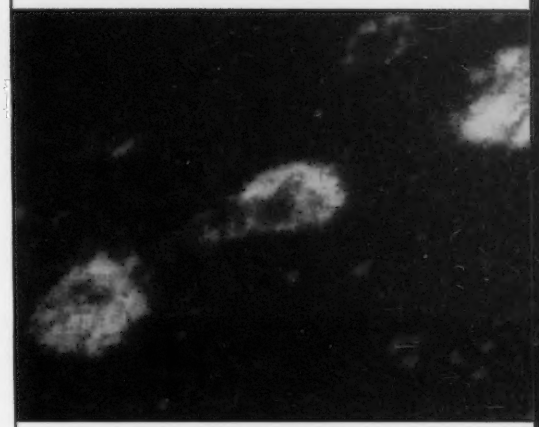
1569 Sequential roles for myosin-X in BMP6-dependent filopodial extension, migration, and activation of BMP receptors
Xinchun Pi, Rongqin Ren, Russell Kelley, Chunlian Zhang, Martin Moser, Aparna B. Bohil, Melinda DiVito, Richard E. Cheney, and Cam Patterson

1583 Zasp is required for the assembly of functional integrin adhesion sites
Klodiana Jani and Frieder Schöck

1599 Mice deficient in involucrin, envoplakin, and periplakin have a defective epidermal barrier
Lisa M. Sevilla, Rachida Nachat, Karen R. Groot, John F. Klement, Jouni Uitto, Philippe Djian, Arto Määttä, and Fiona M. Watt

Corrections

1613 Alternative function for the mitochondrial SAM complex in biogenesis of α-helical TOM proteins
Diana Stojanovski, Bernard Guiard, Vera Kozjak-Pavlovic, Nikolaus Pfanner, and Chris Meisinger



Neurotransmitter release requires the palmitoylation of CSP (magenta) by HIP14 (green), which localizes CSP to synapses.
See page 1481.